

DR VAISHNAVI. V

MMC AND RAJIV GANDHI GOVERNMENT

GENERAL HOSPITAL

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ABSTRACT

Tumescent technique has been practiced for over twenty years especially in liposuction. Using tumescent local anaesthesia for harvesting a split thickness skin graft is not in much practise. Tumescent anaesthesia is a combination of crystalloid, lignocaine, adrenaline and sodium bicarbonate. Adrenaline is used to harvest skin grafts due to its vasoconstriction effect which limits blood loss. Although adrenaline is widely used, its local and systemic effects vary from patient to patient. Lignocaine with its bacteriostatic property aids in efficient graft uptake on the recipient site. .. Aim of our study was to determine skin graft take after tumescent technique compared to non-tumescent technique for harvesting.

OBJECTIVE

1. To compare the efficacy of tumescent and non-tumescent technique in split skin graft.
2. To assess age/gender differences in the two groups.
3. To assess the percentage healing of donor sites on day 10 in both groups.
4. To assess the percentage graft take on day 5 for patients who had harvesting done by tumescent technique and those who had non- tumescent technique.

5. To assess the final outcome of non-healed donor and recipient sites after short term follow up of 3 weeks.

STUDY CENTRE

Madras Medical College and Rajiv Gandhi Government General Hospital,
Chennai

DURATION OF STUDY

JULY 2017 TO JUNE 2018

STUDY DESIGN

Observational study (prospective)

SAMPLE SIZE

50

ETHICAL CLEARANCE - approved

INTRODUCTION

Ulcers that are formed post wound debridement of cellulitis, necrotizing fascitis, burns and trauma with a healthy granulation tissue are treated by split thickness skin graft harvested from a normal anatomical site preferably thigh and grafted on the ulcer or recipient site. The success of skin graft depends on 3 factors – donor site, recipient bed and general condition of the patient. Graft uptake

depends on graft nutrient uptake, vascular ingrowth from recipient bed, and postoperative immobility.

Factors affecting graft take include seroma/ hematoma formation, shearing of graft, contaminated or poorly vascularized bed, comorbid conditions and smoking. Graft take is decreased in structures with decreased blood supply such as bone, cartilage and tendon. Wound bed should be vascular, free of pus and streptococcal infection.

In this study we evaluate the use of adrenaline and lignocaine, and study its effect on graft take as used in tumescent technique. Tumescent technique is the subdermal injection of fluid containing vasoconstrictor and local anesthetic for harvesting a graft to reduce blood loss and improve graft take.

Tumescent local anesthesia (TLA) is a combination of crystalloid, local anesthetic, vasoconstrictor like adrenaline and sodium bicarbonate. Crystalloid is used for hydrating the donor site and creating a plane for harvestment. Local anesthetic has an antimicrobial activity that prevents infection of graft and improves recipient take. Tumescent technique has been evolved over the years but not used much for harvesting graft. This study is done to evaluate the effectiveness of graft uptake and better healing of donor site following tumescent application.

AIM AND OBJECTIVES

- To compare the efficacy of tumescent and non-tumescent technique in split skin graft.
- To assess age/gender differences in the two groups.
- To assess the percentage healing of donor sites on day 10 in both groups.
- To assess the percentage graft take on day 5 for patients who had harvesting done by tumescent technique and those who had non-tumescent technique.
- To assess the final outcome of donor and recipient sites after short term follow up of 3 weeks.

SUBJECT SELECTION

INCLUSION CRITERIA

1. Patients aged 18-65 years with no comorbid conditions and who gave consent to participate in the study.
2. Patients with clean wounds prepared for grafting.

EXCLUSION CRITERIA

1. Patients with comorbid conditions (HTN, Diabetes, Liver disease, Renal failure, malignancies, vasculitis, HIV/AIDS, PEM)
2. Patient with albumin levels < 30 g/dl, Hemoglobin level < 10 g/dl
3. Patients who refused or were unable to give consent.
4. Patient with known allergy to adrenaline.
5. Pus swab growing beta-hemolytic streptococcus, citrobacter and acinobacter.
6. Patients who were currently smoking and had stopped smoking less than six months.
7. Patients with chemical and electrical burns.

METHODOLOGY

All Patients who fit the inclusion criteria will be observed and following data collected

1. Routine blood investigations

- Hemoglobin
- Total WBC count

2. HIV tests

3. Surface area of raw site to be grafted will be traced and approximated.

4. Pus swab test

5. A test dose of lignocaine and adrenaline is given
6. Comparative study is done on the same patient with a graft being harvested without tumescent technique and the next graft being harvested with tumescent technique.

All collected data will be analyzed and conclusions derived

DISCUSSION

This study is aimed at showing better and early graft uptake on the recipient site and better healing on the donor site. The patients selected were in the age group of 18-65 years with no comorbid conditions patients with clean wounds prepared for grafting. Both the techniques were practiced on the same patient with one graft taken with tumescent anesthesia and other without it thereby reducing the other confounding factors.

The commonest site of raw area was mostly dorsum of foot followed by leg. The graft was harvested from the thigh. In our study we found that the skin graft take rate was 97.10%(3.9) in the tumescent group of patients and 94.40%(3.8) in the non tumescent group of patients. This showed in fact that tumescent technique gave better skin graft take rates.

However we wish to point out that the grafts were monitored relatively on day 5. In both groups the donor site had healed by day 10 (99.50% and 95%

respectively). Tumescent technique was found to be superior on the donor site. By the end of 3 weeks both techniques showed similar results.

Tumescent technique had better outcome and we postulate that there could be less hematoma/seroma formation on grafted site, bacteriostatic property of lignocaine maintained an aseptic environment under the graft

CONCLUSION

Based on the following study conclusion is made that harvesting graft with tumescent technique give better take results and donor site healing compared to non tumescent technique non tumescent technique.

KEY WORDS

Split skin graft, tumescent anesthesia, non tumescent, lidocaine, adrenaline, hydrodissection, bacteriostatic, humby knife, raw area, donor site, recipient site, down blade, skin, capillary ingrowth, inosculation, imbibitions, revascularisation, contractures.

